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L3   ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   2000:755289  CAPLUS
DN   133:323079
ED   Entered STN:  26 Oct 2000
TI   Composition for a nonwettable transparent coating and coated articles
IN   Guillaumon, Jean-Claude; Nabarra, Pascale Veronique
PA   Centre National d'Etudes Spatiales, Fr.
SO   Eur. Pat. Appl., 10 pp.
     CODEN: EPXXDW
DT   Patent
LA   French
IC   ICM  C09D183-02
     ICS  C09D183-04; C03C017-30
CC   42-10 (Coatings, Inks, and Related Products)
     Section cross-reference(s): 57
FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
     ---------------     ----   --------   --------------------   --------
PI   EP 1046689           A1    20001025   EP 2000-401095         20000419 <--
     EP 1046689           B1    20030625
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO
     FR 2792323           A1    20001020   FR 1999-4890           19990419
     FR 2792323           B1    20010706
     AT 243730            E     20030715   AT 2000-401095         20000419
PRAI FR 1999-4890         A     19990419
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
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 EP 1046689      ICM    C09D183-02
                 ICS    C09D183-04; C03C017-30
AB   Compns. for manufacture of nonwettable, antisoiling, transparent coatings,
     useful for transparent substrates such as glass, contain (a) a
     polydialkoxysiloxane, (b) a polysiloxane having reactive terminal groups,
     (c) a crosslinker, (d) optionally, colloidal silica, (e) a crosslinking
     catalyst.
ST   crosslinkable polysiloxane nonwettable antisoiling transparent coating
     glass
IT   Coating materials
        (antisoiling; compns. a nonwettable antisoiling transparent coatings)
IT   Organic glasses
     Plate glass
     RL: MSC (Miscellaneous)
        (substrates; compns. a nonwettable antisoiling transparent coatings)
IT   Coating materials
        (transparent; compns. a nonwettable antisoiling transparent coatings)
IT   Coating materials
        (water-resistant; compns. a nonwettable antisoiling transparent
        coatings)
IT   1185-55-3, Methyltrimethoxysilane
     RL: TEM (Technical or engineered material use); USES (Uses)
        (M 9100; compns. a nonwettable antisoiling transparent coatings)
IT   18165-73-6, Diethyl silicate
     RL: TEM (Technical or engineered material use); USES (Uses)
        (PS 9120; compns. a nonwettable antisoiling transparent coatings)
IT   78-10-4, Tetraethoxysilane
     RL: TEM (Technical or engineered material use); USES (Uses)
        (T 1807; compns. a nonwettable antisoiling transparent coatings)
IT   7631-86-9, Silica, uses
     RL: MOA (Modifier or additive use); TEM (Technical or engineered material
     use); USES (Uses)
        (colloidal; compns. a nonwettable antisoiling transparent coatings)
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IT 681-84-5, T1980
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(compns. a nonwettable antisoiling transparent coatings)
IT 78-62-6, Dimethyldiethoxysilane 562-90-3, Silicon tetraacetate 682-01-9, Tetrapropoxysilane 2031-67-6, Methyltriethoxysilane 2944-70-9, Methylvinyldiacetoxysilane 3768-58-9, Bis(dimethylamino)dimethylsilane 4130-08-9, Vinyltriacetoxysilane 13368-45-1, Bis(dimethylamino)methylvinylsilane 16230-35-6, Bis(N-methylbenzamido)ethoxymethylsilane 17689-77-9, Ethyltriacetoxysilane 18186-97-5, Dimethyltetramethoxydisiloxane 18243-23-7, Dimethylacetoxysilane 18420-09-2, 1,1,3,3-Tetramethyl-1,3-diethoxydisiloxane 31692-79-2, PS 340.5 31900-57-9D, Dimethylsilanediol homopolymer, reactive group-terminated 97917-34-5, PS 510
RL: TEM (Technical or engineered material use); USES (Uses)
(compns. a nonwettable antisoiling transparent coatings)
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(2) Anon; PATENT ABSTRACTS OF JAPAN 1998, V1998(13)
(3) Daikin Ind Ltd; EP 0811669 A 1997 CAPLUS
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RN 13368-45-1
RN 16230-35-6
RN 17689-77-9
RN 18186-97-5
RN 18243-23-7
RN 18420-09-2
RN 31692-79-2
RN 31900-57-9D
RN 97917-34-5

L3 ANSWER 2 OF 2 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2001-051671 [07] WPIX
DNC C2001-014368
TI Non-wettable transparent coatings for mineral and organic glass formed from a composition comprising a polydialkoxysiloxane, a polysiloxane with reactive end groups, a crosslinking agent and a curing catalyst.
DC A93 A95 G02 L01
IN GUILLAUMON, J; NABARRA, P V; GUILLAUMON, J C
PA (CNES) CENT NAT ETUD SPATIALES
CYC 25
PI EP 1046689 A1 20001025 (200107)* FR 10 C09D183-02 <--
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI

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     FR 2792323      A1 20001020 (200107)             C09D183-06
     EP 1046689      B1 20030625 (200349)  FR         C09D183-02    <--
         R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
     DE 60003489     E  20030731 (200357)             C09D183-02
ADT  EP 1046689 A1 EP 2000-401095 20000419; FR 2792323 A1 FR 1999-4890
     19990419; EP 1046689 B1 EP 2000-401095 20000419; DE 60003489 E DE
     2000-00003489 20000419, EP 2000-401095 20000419
FDT  DE 60003489 E Based on EP 1046689
PRAI FR 1999-4890          19990419
IC   ICM  C09D183-02; C09D183-06
     ICS  C03C017-28; C03C017-30; C09D183-04
ICI  C09D183-06, C09D183:08
AB   EP    1046689 A UPAB: 20010202
     NOVELTY - Composition for forming non-wettable transparent coatings
     comprising (a) a polydialkoxysiloxane, (b) a polysiloxane with reactive
     end groups, (c) a crosslinking agent, (d) optionally, colloidal silica and
     (e) a curing catalyst.
          DETAILED DESCRIPTION - Composition for forming non-wettable
     transparent coatings comprising (a) a polydialkoxysiloxane, (b) a
     polysiloxane with reactive end groups, (c) a crosslinking agent, (d)
     optionally, colloidal silica and (e) a curing catalyst.
          USE - Especially for applying a non-wettable transparent coating to
     mineral or organic glass, especially aircraft cockpit glass and windows,
     motor vehicle windscreens and windows, glazing in buildings, etc.
          ADVANTAGE - The coatings have excellent transparency (transmission
     greater than 98 % at 300-800 nm), high hardness and high abrasion
     resistance, these properties remaining substantially unchanged during
     ageing of the coating. The coatings are non-wettable and do not encourage
     the sticking of dust, dirt and other soiling such as fingerprints which
     occurs with untreated glass, so that good visibility through coated
     glazing is maintained for long periods.
     Dwg.0/0
FS   CPI
FA   AB
MC   CPI: A06-A00B; A06-A00E1; A08-D01; A12-B05; G02-A05; L01-G04B; L01-L02

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PTO 04-5114

CY=EU DATE=20001025 KIND=A1
PN=1 046 689

NON WETTABLE, TRANSPARENT COATING COMPOUND, AND COATED ITEMS OBTAINED
[Composition de revêtement transparent non-mouillable et articles revêtus obtenus.]

Jean-Claude Guillaumon, et al.

UNITED STATES PATENT AND TRADEMARK OFFICE
Washington, D.C. September 2004

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INTERNATIONAL CLASSIFICATION	(51): C09D 183/02, C09D 183/04, C03C 17/30
DOMESTIC CLASSIFICATION	(52):
PRIORITY COUNTRY	(33): FR
PRIORITY NUMBER	(31): 9904890
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INVENTOR	(72): Jean-Claude Guillaumon and Pascale Nabarra
APPLICANT	(71): Centre National d'Etudes Spatiales, FR
TITLE	(54): NON WETTABLE, TRANSPARENT COATING COMPOUND, AND COATED ITEMS OBTAINED
FOREIGN TITLE	(54A): Composition de revêtement transparent non-mouillable et articles revêtus obtenus

The present invention pertain to transparent, non wetable, and spot resistant coating compound, and the items having a hardened coating obtained from this compound. /2*

The invention pertains in particular to mineral, or organic glass items, used in particular in the aeronautical sector (cabin windows, cockpit), the automobile sector (windshield, windows), or the building sector (windows), coated with such a coating.

The wetness nature is linked to the spreading, and adherence ability of polar, and non polar liquid films to the surface of substrates, which is directly dependant on the surface energy of these substrates, and liquids' surface tension.

For example, in the case of water, with a high surface tension, its spreading ability on the surface of glass is affected by a high energy of this surface.

The wettability also designates the tendency of substrates to retain dirt, or spots (traces of finger, for example). This spots cause a decrease in the transparency of the glass which can be bothersome.

To decrease the wettability of glass, it is therefore necessary to decrease its surface energy by applying an adequate coating.

There are different types of non wetable coatings described in various patents.

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*Numbers in the margin indicate pagination in the foreign text.

However, these coatings have a tendency to deteriorate over time due to natural aging (humidity, pollution, solar ultraviolet rays), but also due to poor resistance to abrasion. These deteriorated coatings lose their transparency properties, which causes them to become unutilizable.

The present invention's goal is to provide a coating compound for items, in particular in glass, which, after hardening, gives a coating which is perfectly transparent in the visible (transmission greater than 98% between 300 and 800 nm), non wetable, with superior hardness, and which possess a good resistance to abrasion, these properties being not substantially altered over time.

The invention pertains to a transparent, non wetable coating compound, including (a) a polydialkoxysiloxane, (b) a polysiloxane with reactive terminal groups, (c) a reticulating agent, (d) colloidal silica, and (e) a hardening catalyst.

The polydialkoxysiloxanes (a) which can be used in the invention have the formula $(Si(OR)_2O)_n$ in which:

R = a methyl, or ethyl radical, and N is greater than 3.

If desired, these polydialkoxysiloxanes can be combined with dialkoxymetallics, for example diethyoxysiloxane.

The polydiethoxysiloxane is the preferred constituent because of its better reactivity.

The general formula of the polysiloxanes with reactive terminal groups used in the invention is:

$$X-\underset{\displaystyle Me}{\overset{\displaystyle Me}{\mid}}\!\!\!\!\!Si-O-\left[\underset{\displaystyle Me}{\overset{\displaystyle Me}{\mid}}\!\!\!\!\!Si-O-\right]_n\underset{\displaystyle Me}{\overset{\displaystyle Me}{\mid}}\!\!\!\!\!Si-X$$

in which n is greater than 1, and X is a reactive grouping, for example -H, $-CH=CH_2$ - OH, -Cl, -BR, -O-Me, -O-Et, -O-Ac, $-N{=}Me_2$, $-N{=}Et_2$, $-N{=}Pr_2$, $-O-N{=}CR_2$, and similar groups.

The reticulating agent (c) used in the invention can be any organic silicon compound with at least two reactive groups. For example, the following compounds can be mentioned: dimethyldiacetoxysilane, vinylmethyldiacetoxysilane, ethyltriacetoxysilane, methyltriacetoxysilane, vinyltriacetoxysilane, silicon tetraacetate, dimethyldiethoxysilane, 1,1,3,3-tetramethyl-1,3-diethoxysilane, methyltriethoxysilane, methyltrimethoxysilane, dimethyltetramethoxydisiloxane, tetraethoxysilane, tetramethoxysilane, tetrapropoxysilane, bis(N-methylbenzylamido)-ethoxymethylsilane, bis(dimethylamino)dimethylsilane, bis(diethylamino)methylvinylsilane.

The proportions of the constituents (a), (b), and (c) can vary greatly. As an indication, they can go from 5 to 60% for constituent (a), 5 to 90% for constituent (b), and 5 to 60% for constituent (c), the total of (a), (b), and (c) making 100%. The constituent (d), the colloidal silica, is optional, and can be added in an amount going

from 0 to 50% in relation to the sum of the constituents (a), (b), and (c).

In order to accelerate the polymerization at room temperature, and/or at high temperature, if desired, a catalyst (e) can be used, or mixture of catalysts, in a proportion going from 0.01 to 5% in weight in relation to the sum of the constituents (a), (b), and (c).

A non restrictive list of the catalysts which can be used is as follows:

- organic tin salts, or organo-tin compounds like diacetate or dibutyl-tin, dilaurate or dibutyl-tin, tin octoate, diocotate, or dibutyl-tin, tetrabutyl-tin, dimethoxydibutyl-tin, etc...

- organic zinc salts like zinc octoate, zinc acetate, etc...

- organic titanium compounds like: tetrabutyl-titanium, tetraethoxytitanium, tetraoctyltitanium, tetramethoxytitanium, tetra n-propoxytitanium, etc... /3

- platinum complexes with a siloxane such as divinyltetramethyldisiloxane, cyclovinylmethylsiloxane, etc.

The colloidal silica is optional, and incorporated into the mixture in order to increase the resistance to abrasion, and scratching, if desired. However, an amount of 50% in weight of silica in relation to the constituents (a) + (b) + (c) should not be exceeded, because that would lead to the appearance of small cracks, and a deteriorated transparency.

The colloidal silica is added to the other constituents in suspension in a solvent (toluene, xylene, alcohol, etc...) The diameter of the silica particles is, preferably, not greater than 20 nanometers in order to obtain an optima transparency.

The invention's compound can be applied to substrates which are glass, or other materials, in a thickness of several micrometers to several tenths of micrometers. These coatings can be applied in one or several successive layers.

If desired, or necessary, the invention's coatings can be applied in a primary anchoring layer, or after pre-treating the substrate's surface.

Also, if desired, for reasons of application ease, or others, the coating compounds used in the invention can be diluted before application, at a rate of dry material going from 1 to 80% in weight, by means of a solvent like: aliphatic hydrocarbons, for example, hexane, heptane, octane, cyclohexane, etc..., aromatic hydrocarbons, for example, benzene, toluene, xylene, styrene, etc..., halogenated hydrocarbons, for example trichloromethylene, methyl chloride, chloroform, etc..., or mixtures of these solvents.

Applying a coating can be done with a paint gun, a brush, or any know technique. The hardening is usually done at room temperature, but using a heater is possible to accelerate the hardening.

The following non restrictive examples are given in order to illustrate the invention.

EXAMPLE 1

The mixture obtained from a polydiethoxysiloxane containing 40 to 42% of SiO_2 (viscosity 4 to 5 mPa.s) (Ref. PS 9120 from PETRARCH SYSTEMS, INC., USA) (3 parts in weight), of methyltrimethoxysilane (Ref. M9100 from PETRARCH SYSTEMS, INC., USA) (5 parts in weight), of polydimethylsiloxane with a silanol terminal, with a molecular weight situated between 1500 and 2000) (viscosity 45 to 85 mPa.s) (Ref. PS 340.5 from PETRARCH SYSTEMS, INC., USA) (0.5 part in weight), and of dibutyl-tin diacetate (MERCK) (0.1 part in weight), is applied with a gun to a pre-treated mineral glass plate in order to obtain a 5 micrometer thick coating, after hardening at room temperature. The pretreatment applied to the glass plate in this example, and following examples consists of a chemical cleaning of about 1 hour with an alkaline solution sold under the name RBS 35 by the RBS Company, Germany.

The optical transmittance rating of the coating is 98% between 300 and 800 nanometers.

The resistance to scratching is measured by the steel wool test which consists of doing 10 back, and forth movements, using a square of about 3 cm by 3 cm of this material, rubbing the coated glass in the direction of the fibers with constant pressure during this operation. The glass is then wiped with a dry cloth, then rinsed with alcohol, then the state of the coating is visually evaluated, and a grade using the following grading system is given to it:

0 no scratch is seen.

1 glass is not scratched very much (0 to 5 scratches).

2 glass is somewhat scratched (up to 20 scratches).

3 glass scratched quite a lot (number of scratches less than 50).

4 glass very scratched (number of scratches greater than 50).

5 glass equal to or worse than the uncoated substrate.

The value measured for the example 1's coating is 2.

The coating's wettability can be measured simply using the following operating procedure:

1 drop of deionized water is spread on the surface of a perfectly cleaned glass plate, then dried with alcohol, kept in a horizontal position.

In the case of an untreated glass, the water spreads, and the diameter of the deposit is 12 mm, in the case of the treated substrate, the diameter of the spot does not exceed 5 mm, which clearly shows the non wettable nature of the coating described in example 1.

EXAMPLE 2

The mixture obtained from a polydiethoxysiloxane (5 parts in weight), methyltrimethoxysilane (1 part in weight), polydimethylsiloxane with a silanol terminal, (5 parts in weight), and of dibutyl-tin diacetate (0.1 part in weight), is applied with a gun to a pre-treated mineral glass plate as in example 1, in a thickness of 5 micrometers (as measured after hardening at room temperature).

The optical transmittance of the coating is 99% between 300 and 800 nanometers.

The resistance to scratching using the test described in Example 1 is situated between 2, and 3. /4

A drop of deionized water spread on the coating's surface does not spread, and its diameter is in the range of 5 mm.

EXAMPLE 3

The mixture obtained from a polydiethoxysiloxane (5 parts in weight), methyltrimethoxysilane (5 parts in weight), polydimethylsiloxane with a silanol terminal, (5 parts in weight), and of dibutyl-tin diacetate (0.1 part in weight), is applied with a gun to a pre-treated mineral glass plate as in example 1, in a thickness of 5 micrometers (as measured after hardening at room temperature).

The optical transmittance of the coating is 99% between 300 and 800 nanometers.

The resistance to scratching using the test described in example 1 is 2.

A drop of deionized water spread on the coating's surface does not spread, and its diameter is in the range of 5 mm.

EXAMPLE 4

The mixture obtained from a polydiethoxysiloxane (4 parts in weight), methyltrimethoxysilane (5 parts in weight), polydimethylsiloxane with a silanol terminal, (5 parts in weight), and of dibutyl-tin diacetate (0.1 part in weight), is applied with a gun

to a pre-treated mineral glass plate as in example 1, in a thickness of 5 micrometers (as measured after hardening at room temperature).

The optical transmittance of the coating is 98% between 300 and 800 nanometers.

The resistance to scratching using the test described in example 1 is situated between 2 and 3.

A drop of deionized water spread on the coating's surface does not spread, and its diameter is in the range of 5 mm.

EXAMPLE 5

The mixture obtained from a polydiethoxysiloxane (5 parts in weight), methyltrimethoxysilane (10 parts in weight), polydimethylsiloxane with a silanol terminal, (5 parts in weight), and of dibutyl-tin diacetate (0.1 part in weight), is applied with a gun to a pre-treated mineral glass plate as in example 1, in a thickness of 5 micrometers (as measured after hardening at room temperature).

The optical transmittance of the coating is 98% between 300 and 800 nanometers.

The resistance to scratching using the test described in example 1 is 2.

A drop of deionized water spread on the coating's surface does not spread, and its diameter is in the range of 5 mm.

EXAMPLE 6

The mixture obtained from a polydiethoxysiloxane (5 parts in weight), methyltrimethoxysilane (10 parts in weight),

polydimethylsiloxane with a silanol terminal, (5 parts in weight), colloidal silica (0.2 part in weight) and of dibutyl-tin diacetate (0.1 part in weight), is applied with a gun to a pre-treated mineral glass plate as in example 1, in a thickness of 5 micrometers (as measured after hardening at room temperature).

The optical transmittance of the coating is 98% between 300 and 800 nanometers.

The resistance to scratching using the test described in example 1 is 2.

A drop of deionized water spread on the coating's surface does not spread, and its diameter is in the range of 5 mm.

EXAMPLE 7

The mixture obtained from a polydiethoxysiloxane (5 parts in weight), methyltrimethoxysilane (10 parts in weight), polydimethylsiloxane with a silanol terminal, (5 parts in weight), colloidal silica (0.6 part in weight) and of dibutyl-tin diacetate (0.1 part in weight), is applied with a gun to a pre-treated mineral glass plate as in example 1, in a thickness of 5 micrometers (as measured after hardening at room temperature).

The optical transmittance of the coating is 98% between 300 and 800 nanometers.

The resistance to scratching using the test described in example 1 is situated between 1 and 2.

A drop of deionized water spread on the coating's surface does not spread, and its diameter is in the range of 5 mm.

EXAMPLE 8

The mixture obtained from a polydiethoxysiloxane (5 parts in weight), methyltrimethoxysilane (10 parts in weight), polydimethylsiloxane with a silanol terminal, (5 parts in weight), colloidal silica (1 part in weight) and of dibutyl-tin diacetate (0.1 part in weight), is applied with a gun to a pre-treated mineral glass plate as in example 1, in a thickness of 5 micrometers (as measured after hardening at room temperature).

The optical transmittance of the coating is 98% between 300 and 800 nanometers.

The resistance to scratching using the test described in example 1 is situated between 1 and 2.

A drop of deionized water spread on the coating's surface does not spread, and its diameter is in the range of 5 mm.

EXAMPLE 9

The mixture obtained from a polydiethoxysiloxane (5 parts in weight), methyltrimethoxysilane (10 parts in weight), polydimethylsiloxane with a silanol terminal, (5 parts in weight), colloidal silica (5 parts in weight) and of dibutyl-tin diacetate (0.1 part in weight), is applied with a gun to a pre-treated mineral glass plate as in example 1, in a thickness of 5 micrometers (as measured after hardening at room temperature).

The optical transmittance of the coating is 98% between 300 and 800 nanometers.

The resistance to scratching using the test described in example 1 is situated between 1 and 2.

A drop of deionized water spread on the coating's surface does not spread, and its diameter is in the range of 5 mm.

EXAMPLE 10

The mixture obtained from a polydiethoxysiloxane (5 parts in weight), methyltrimethoxysilane (10 parts in weight), polydimethylsiloxane with a silanol terminal, (5 parts in weight), colloidal silica (10 parts in weight) and of dibutyl-tin diacetate (0.1 part in weight), is applied with a gun to a pre-treated mineral glass plate as in example 1, in a thickness of 5 micrometers (as measured after hardening at room temperature).

The optical transmittance of the coating is 98% between 300 and 800 nanometers.

The resistance to scratching using the test described in example 1 is 1.

A drop of deionized water spread on the coating's surface does not spread, and its diameter is in the range of 5 mm.

EXAMPLE 11

The mixture obtained from a polydiethoxysiloxane (5 parts in weight), tetramethoxysilane (Ref. T1980 from PETRARCH SYSTEMS, INC., USA) (5 parts in weight), polydimethylsiloxane with a dimethylaminopropyl terminal, (Ref. PS 510 from PETRARCH SYSTEMS, INC., USA), with a molecular weight of 2500, and a viscosity of 50 mPa.s (5 parts in weight), and of dibutyl-tin diacetate (0.02 part in weight), is applied with a gun to a pre-treated mineral glass plate as in example 1, in a thickness of 5 micrometers (as measured after hardening at room temperature).

The optical transmittance of the coating is 98% between 300 and 800 nanometers.

The resistance to scratching using the test described in example 1 is 2.

A drop of deionized water spread on the coating's surface does not spread, and its diameter is in the range of 5 mm.

EXAMPLE 12

The mixture obtained from a polydiethoxysiloxane (5 parts in weight), methyltrimethoxysilane (5 parts in weight), polydimethylsiloxane with a silanol terminal (3 parts in weight) polydimethylsiloxane with a dimethylaminopropyl terminal, (2 parts in weight), and tin octoate (MERCK) (0.03 part in weight), is applied with a gun to a pre-treated mineral glass plate as in example 1, in a thickness of 5 micrometers (as measured after hardening at room temperature).

The optical transmittance of the coating is 98% between 300 and 800 nanometers.

The resistance to scratching using the test described in example 1 is 2.

A drop of deionized water spread on the coating's surface does not spread, and its diameter is in the range of 5 mm.

EXAMPLE 13

The mixture obtained from a polydiethoxysiloxane (5 parts in weight), methyltrimethoxysilane (5 parts in weight), polydimethylsiloxane with a dimethylaminopropyl terminal, (5 parts in weight), colloidal silica (5 parts in weight), and tin octoate (MERCK) (0.05 part in weight), is applied with a gun to a pre-treated mineral glass plate as in example 1, in a thickness of 5 micrometers (as measured after hardening at room temperature).

The optical transmittance of the coating is 98% between 300 and 800 nanometers.

The resistance to scratching using the test described in example 1 is 1.

A drop of deionized water spread on the coating's surface does not spread, and its diameter is in the range of 5 mm.

EXAMPLE 14

The mixture obtained from a polydiethoxysiloxane (5 parts in weight), tetraethoxysilane (Ref. T1807 from PETRARCH SYSTEMS, INC., USA) (10 parts in weight), polydimethylsiloxane with a silanol terminal (5 parts in weight) colloidal silica, (5 parts in weight), and tin octoate (0.05 part in weight), is applied with a gun to a pre-treated mineral glass plate as in example 1, in a thickness of 5 micrometers (as measured after hardening at room temperature).

The optical transmittance of the coating is 98% between 300 /6
and 800 nanometers.

The resistance to scratching using the test described in example 1 is 1.

A drop of deionized water spread on the coating's surface does not spread, and its diameter is in the range of 5 mm.

<u>EXAMPLE 15</u>

The mixture obtained from a polydiethoxysiloxane (5 parts in weight), tetraethoxysilane (10 parts in weight), polydimethylsiloxane with a silanol terminal (3 parts in weight), polydimethylsiloxane with a dimethylaminoproply terminal (2 parts in weight), colloidal silica, (5 parts in weight), and tin octoate (0.02 part in weight), is applied with a gun to a pre-treated mineral glass plate as in example 1, in a thickness of 5 micrometers (as measured after hardening at room temperature).

The optical transmittance of the coating is 98% between 300 and 800 nanometers.

The resistance to scratching using the test described in example 1 is 1.

A drop of deionized water spread on the coating's surface does not spread, and its diameter is in the range of 5 mm.

It is clear that the production methods are only examples, and that they can be modified, in particular by substituting equivalent techniques, without leaving the invention's scope.

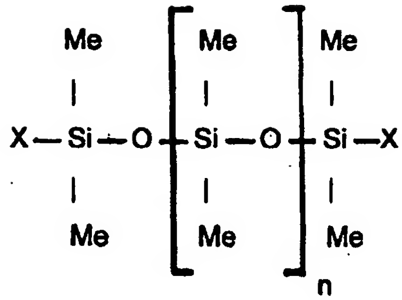
Claims

1. Transparent, non wettable, coating compound containing (a) a polydialkoxysiloxane, (b) a polysiloxane with reactive terminal groups, (c) a reticulating agent, (d) colloidal silica, and (e) a hardening catalyst.

2. Compound according to Claim 1, characterized by the fact that the polydialkoxysiloxane (a)'s formula is $(Si(OR)_2O)n$ in which:

R = a methyl, or ethyl radical, and N is greater than 3.

3. Compound according to Claim 1, characterized by the fact that the general formula of the polysiloxane (b) with reactive terminal groups is:



in which n is greater than 1, and X is a reactive grouping, for example -H, $-CH = CH_2$ - OH, -Cl, -BR, -O-Me, -O-Et, -O-Ac, $-N=Me_2$, $-N=Et_2$, $-N=Pr_2$, $-O-N=CR_2$, and similar groups.

4. Compound according to Claim 1, characterized by the fact that the reticulating agent (c) is chosen among the following compounds: dimethyldiacetoxysilane, vinylmethyldiacetoxysilane, ethyltriacetoxysilane, methyltriacetoxysilane, vinyltriacetoxysilane, silicon tetraacetate, dimethyldiethoxysilane, 1,1,3,3-tetramethyl-1,3-diethoxysilane, methyltriethoxysilane, methyltrimethoxysilane, dimethyltetramethoxydisiloxane, tetraethoxysilane, tetramethoxysilane, tetrapropoxysilane, bis(N-methylbenzylamido)-ethoxymethylsilane, bis(dimethylamino)dimethylsilane, bis(diethylamino)methylvinylsilane.

5. Compound according to Claim 1, characterized by the fact that the catalyst is chosen among the organic tin salts, the organo-tin compounds, the organic zinc salts, the organic titanium compounds, and the platinum complexes with a siloxane.

6. Compound according to any one of Claims 1 to 5, characterized by the fact that it includes in weight, 5-60% of constituent (a), 5-

90% of constituent (b), and 5-60% of constituent (c), the total of (a), (b), and (c) making 100%.

7. Compound according to Claim 6, characterized by the fact that it includes, in addition, up to 50% in weight of colloidal silica in relation to the total of (a), (b), and (c).

8. Compound according to Claim 6 or 7, characterized by the fact that it includes, in addition, 0.01 to 5% in weight of a catalyst in relation to the total of (a), (b), and (c).

9. Item with a non wettable, transparent coating characterized by the fact that said coating was obtained by hardening a layer, applied to said item, of a coating compound as defined by any one of the Claims 1 to 8. /7

10. Item according to Claim 9, characterized by the fact that it is in organic, or mineral glass.